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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,212	02/05/2002	Sang-Young Lee	B-4483PCT 619789-9	8084
7590	01/29/2004			
Richard P Berg Ladas & Parry Suite 2100 5670 Wilshire Boulevard Los Angeles, CA 90036-5679			EXAMINER CHEN, VIVIAN	
			ART UNIT 1773	PAPER NUMBER 6
DATE MAILED: 01/29/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-6

Office Action Summary

Application No.

10/049,212

Applicant(s)

LEE ET AL.

Examiner

Vivian Chen

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 30-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-23 and 37-40 is/are allowed.
- 6) ☒ Claim(s) 1-16, 31, 32 and 41-46 is/are rejected.
- 7) ☒ Claim(s) 24-28, 30 and 33-36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- ☐ Interview Summary (PTO-413) Paper No(s). _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. Claim 29 has been cancelled by Applicant.

Specification

2. The amendment filed 11/6/2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the newly added claim limitations in claims 1, 41, 44 regarding multiple support layers having pores with a different pore size and different pore distribution.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

3. Claims 1-16, 31, 41-43, 44-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for the reasons as set forth in the objection to the amendment filed 11/6/2003 above. While the specification has support for a single support layer having pores with a pore size and pore distribution different from those in the active layers, the specification as originally filed does not have support for multiple support layers with differing pore sizes and distribution.

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4. Claims 2-3, 13, 31, 42, 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "high crystalline polypropylene" in claims 2-3 is a relative term which renders the claims indefinite. The term "high crystalline" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. While in claim 3, certain physical properties do clearly establish the requisite degree of crystallinity, some of the recited physical properties do not..

In claim 13, the language "according to claim 1" is both redundant and confusing. The claim should be amended to be entirely dependent on claim 2.

The phrase "densely structured polymer film" in claims 31, 42, 45 is a relative term which renders the claims indefinite. The term "densely" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

5. Claims 24-28, 30, 32-36 are objected to because of the following informalities. Appropriate correction is required.

In claims 24, 35, the phrases "irradiating ion beams on" is confusing since "irradiate" is generally used in reference to the object being subjected to radiation, not the object providing the radiation. The Examiner suggests that language such as "applying ion beams to either or both

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surfaces... with reactive gas" be used to clarify the claims. Also, see WO '464 for illustrations of more conventional usages of "irradiate" and related terms.

In claims 25, 30, 36 "irradiating of ion beams" should be replaced by language such as "ion beam irradiation" for the reasons stated above.

In claim 25, 36, "irradiation of ion beams on the surface" should be replaced by language such as "irradiating the surface of the precursor film with the ion beams" for the reasons stated above.

The Examiner requests that Applicant carefully check all method claims in light of the above remarks, and make appropriate corrections for clarity. The Examiner further suggests that similarly confusing phrasing used in the specification also be corrected for consistency.

Claim Rejections - 35 USC § 103

6. Claims 1, 4-5, 8-10, 12, 14, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over WANG ET AL (US 6,491,880) or WANG ET AL (US 6,558,634).

The WANG ET AL references each disclose a composite structure comprising a porous support having a first pore size of at least 0.1 microns and a first surface area, and an interfacial layer applied thereon, and an additional active layer, wherein the interfacial layer has a pore size and surface area different than those of the support layer, and wherein the interfacial layer is a catalytically active material and has a thickness of less than 20 microns (WANG ET AL '880, lines 9-18, col. 3; Figure 2; lines 13-15, 45-48, col. 6) (see corresponding portions of WANG ET AL '634) as recited in claims 1, 4, 8-9, 12, 32.

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply an active material to a support with different porosity characteristics in order to improve reaction efficiency. One of ordinary skill in the art would have selected the thickness of the support layer (claim 5) depending on the specific mechanical and structural properties desired for a given usage. It would be obvious to adjust the air permeability of the composite (claim 10) depending on type of reactants and reaction process and equipment used in order to optimize the transport, electrical, or other physical characteristics for given applications. A recitation of the intended use of the claimed invention (claim 14) must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Response to Arguments

7. Applicant's arguments filed 11/6/2003 have been considered but are moot in view of the Applicant's amendments and the new ground(s) of rejection.

Allowable Subject Matter

8. Claims 17-23, 37-40 are allowable over the prior art of record.

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1. Claims 24-28, 30, 33-36 would be allowable if rewritten to overcome the objections to the claims, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

2. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to disclose or suggest the claimed method of forming a composite membrane, wherein an active layer is formed on the precursor film by application of a liquid polymer solution. Specifically, LEE ET AL (US 6,540,953) fails to claim and WO 99/25464 fails to disclose the recited process, incorporating the step of forming the active layer using a liquid polymer solution.


Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vivian Chen whose telephone number is (571) 272-1506. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 6 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

January 23, 2004


Vivian Chen
Primary Examiner
Art Unit 1773